

XILINX ARTIX®-7 (HIGH CURRENT) POWER AND TIMING: OVERVIEW

The Xilinx family of Artix-7 devices provide the highest performance-per-watt fabric, transceiver line rates, DSP processing, and AMS integration in a cost-optimized FPGA. Featuring the MicroBlaze™ soft processor and 1,066Mb/s DDR3 support, this family is the best value for a variety of cost and power-sensitive applications, including software-defined radios, machine vision cameras, and low-end wireless backhaul. The high current case is for designs >4A, and the low current case is for those <4A.

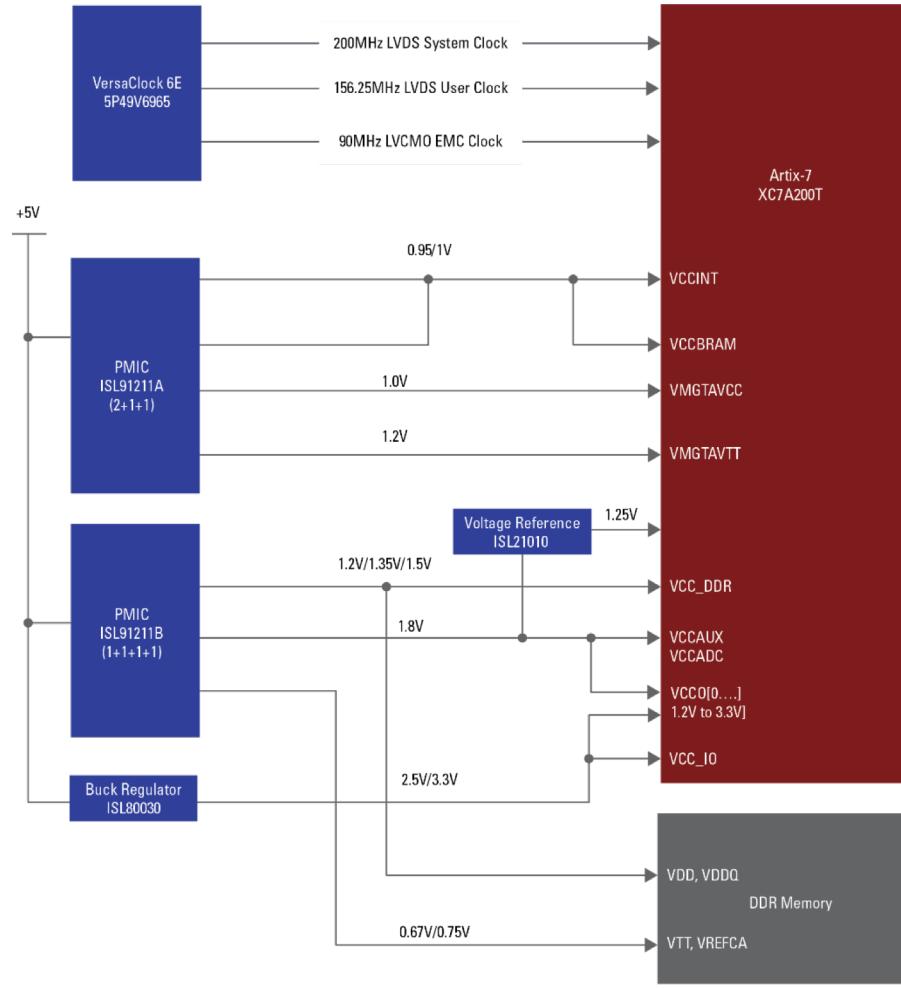
This winning combination highlights the power devices on the reference board for the Xilinx® Artix®-7 family and suggested timing solutions from Renesas.

Visit the [Artix-7 power solutions](#) page to learn more.

Key Features:

- Pre-programmed PMICs specifically designed to meet this use case and provide flexible power solutions
- VersaClock® clocks capable of 350MHz outputs and low jitter attenuation
- ISL21010 provides precise and stable voltage reference for Artix-7 FPGAs

XILINX ARTIX®-7 (HIGH CURRENT) POWER AND TIMING: BLOCK DIAGRAM



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XILINX ARTIX®-7 (HIGH CURRENT) POWER AND TIMING: SUMMARY

■ System benefits

- Multiple PMICs with programmable outputs to reduce board space and manage power requirements
- High performance clocking meets PCIe® Gen1/2/3, USB 3.0, 1/10 GbE clock requirements

Device Category	P/N	Key Features
Power	ISL91211A	Configurable Triple Output Power Management IC
Power	ISL91211B	Configurable Triple Output Power Management IC
Power	ISL80030	Highly Efficient 3A Synchronous Buck Regulator
Power	ISL21010	Precision, low dropout micropower bandgap voltage reference
Timing	5P49V6965	VersaClock® 6E Programmable Clock Generator

ISL91211A/B – Triple/Quad Output Power Management IC

Client/Enterprise/Data Center SSD, NAS, Optical Transceiver Modules, custom power

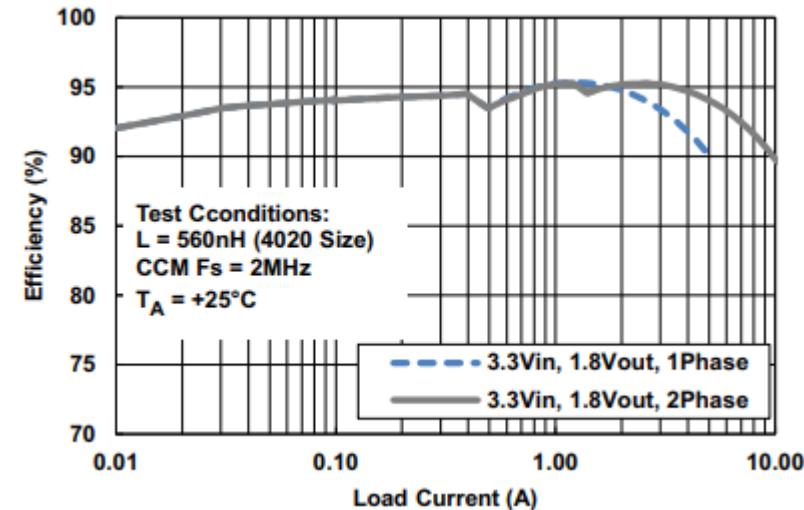
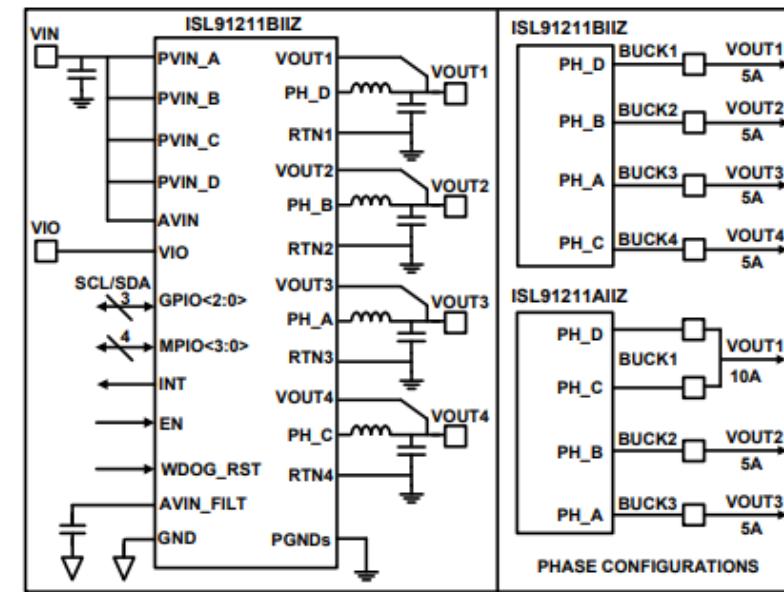
Custom Power

- Triple output 2+1+1 phases (ISL91211A) or quad output single phase (ISL91211B)
- I²C programmable output from 0.3V to 2V
- 5V to 5.5V supply voltage
- 5A per phase output current capability

High Efficiency and Accuracy

- Low IQ in low power mode
- High efficiency (94.7% for 3.8VIN/1.8VOUT)
- ±0.7% system accuracy, remote voltage sensing
- Small solution size

Part #	Package
ISL91211AIIZ-T	54L 3.67x2.55mm WLCSP
ISL91211BIIZ-T	54L 3.67x2.55mm WLCSP



ISL80030/A – 3A Synchronous Buck Converter

General purpose POL DC/DC, FPGA Power, Industrial/Medical equipment

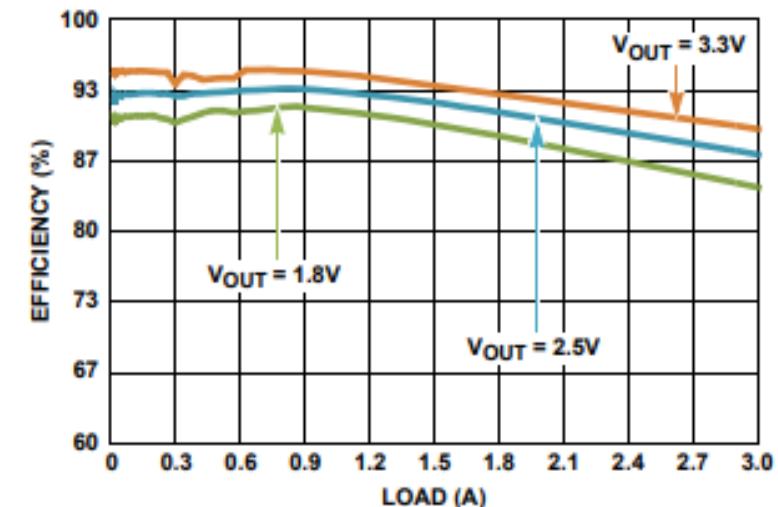
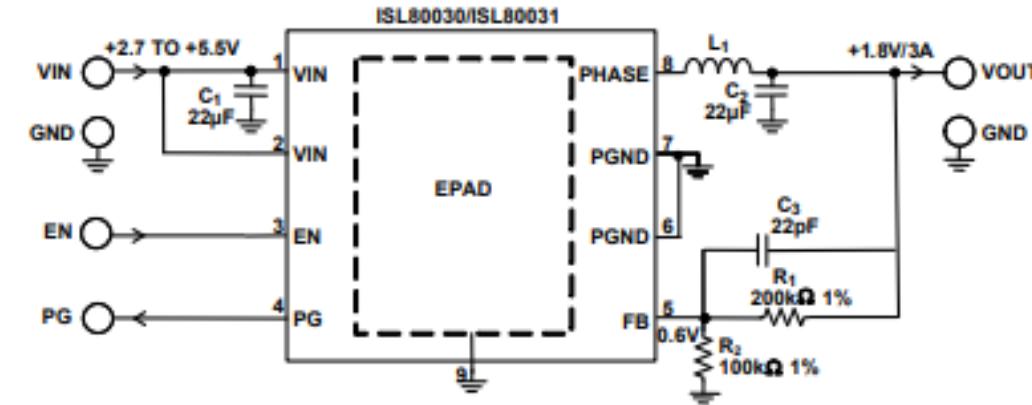
Flexible Power in a small package

- Input voltage range: 2.7V to 5.5V
- Current out max: 3A
- Switching frequency is 1MHz (80030) or 2MHz (80030A)
- Very low $r_{DS(ON)}$ MOSFETs to maximize efficiency

Robust Design

- Negative current protection
- Operates at 100% duty cycle
- Overcurrent and short circuit protection
- Over-temperature/thermal protection

Part #	Package
ISL80030FRZ-T7A	8L 2x2mm DFN
ISL80030AFRZ-T7A	8L 2x2mm DFN



ISL21010 – PRECISION, SMALL PACKAGE

Micropower Voltage Reference

Wide Output Voltages

- Reference output voltages: 1.024V, 1.25V, 1.5V, 2.048V, 2.5V, 3.0V, 3.3V, 4.096V

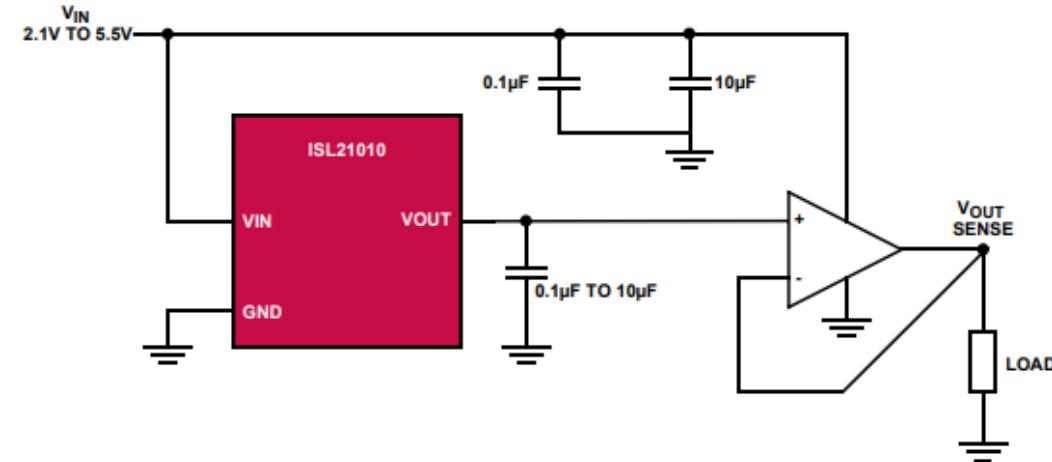
Flexible Supply Voltage

- Operates from a single 2.2V to 5.5V supply (minimum voltage is dependent on voltage option)
- Provides a $\pm 0.2\%$ accurate reference

Output features

- Output current source capability: 25mA
- Output voltage noise ($V_{OUT} = 2.048V$): $58\mu V_{PP-P}$ (0.1Hz to 10Hz)

Part #	Package
ISL21010CFH341Z-TK	3L 2.92x1.3mm SOT-23
ISL21010CFH341Z-T7A	3L 2.92x1.3mm SOT-23



Recommended Operating Conditions

Temperature	-40 °C to +125 °C
Supply Voltage	
$V_{OUT} = 1.024V, 1.25V, 1.5V, 2.048V$	2.2V to 5.5V
$V_{OUT} = 2.5V$	2.6V to 5.5V
$V_{OUT} = 3.0V$	3.1V to 5.5V
$V_{OUT} = 3.3V$	3.4V to 5.5V
$V_{OUT} = 4.096V$	4.2V to 5.5V

5P49V6965 - LOW PHASE JITTER, SMALL SIZE

VersaClock® 6E Series – Flexible Programmable Clock

Very Low Phase Jitter

- <500 fs rms phase jitter
- w/o trading off low power, <50mA core current consumption

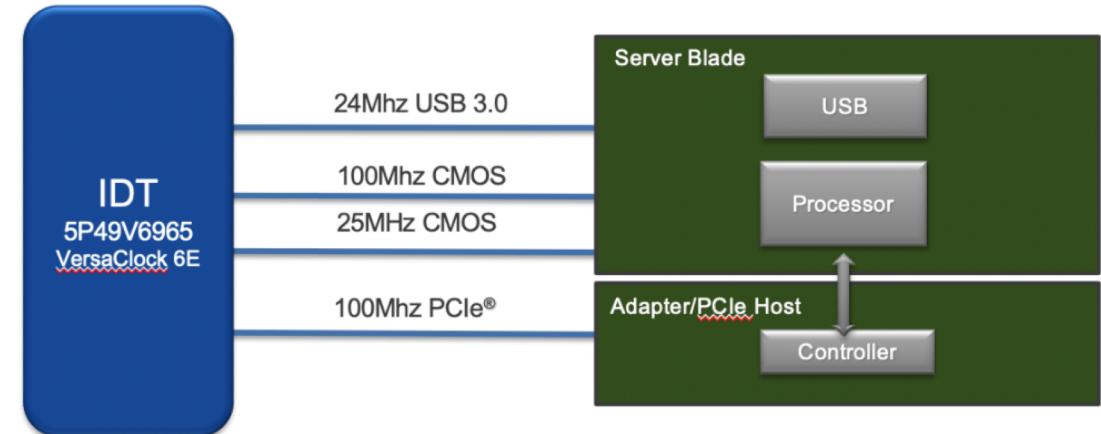
Wide Support

- Meets PCIe Gen 1/2/3/4, USB 3.0, 1/10 GbE clock
- Flexible 1.8V, 2.5V, 3.3V power-rails
- Supports both crystal (8MHz–40MHz) and external clock input(1MHz–350MHz)

Configurable

- 2 programmable I²C addresses allowing multiple devices to be used in same system.
- 4 independent frequencies with 0.001MHz–350MHz output range

Part #	Pack	Package
5P49V6965A000NLGI	Tray	24L 4x4mm VFQFPN
5P49V6965A000NLGI8	Reel	24L 4x4mm VFQFPN



Symbol	Parameter	Conditions	Minimum	Typical	Maximum	Units
J _{CY-CY}	Cycle to Cycle Jitter	LVC MOS 3.3V ±5%, -40°C–90°C.		5	30	ps
		All differential outputs 3.3V ±5%, -40°C–90°C.		25	35	ps
J _{PK-PK}	Period Jitter	LVC MOS 3.3V ±5%, -40°C–90°C.		28	40	ps
		All differential outputs 3.3V ±5%, -40°C–90°C.		4	30	ps
J _{RMS}	RMS Phase Jitter (12kHz–20MHz)	LVC MOS 3.3V ±5%, -40°C–90°C.		0.3		ps
		All differential outputs 3.3V ±5%, -40°C–90°C.		0.5		ps